OIPE
JUL 11 2003
JC154
PATENT & TRADEMARK OFFICE

2665
7A
7-17-03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 2665
Examiner: Mr. Justin M. Philpott

In re PATENT APPLICATION of:

Applicant(s) : Yukihiro OZEKI	)	
Serial No. : 09/494,183	)	**AMENDMENT**
Filed : January 31, 2000	)	
For : MULTIPLEXER, DEMULTIPLEXER AND MULTIPLEX COMMUNICATION SYSTEM	)	
Attorney Ref. : SATA 002	)	

RECEIVED
JUL 15 2003
Technology Center 2600

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is responsive to the Office Action of April 11, 2003, the period for reply to which has been set to expire on July 11, 2003.

Please amend the application as specified in the following pages, and then reconsider the application in view of the Remarks presented thereafter.

FEE ENCLOSED:$ 0
Please charge any further fee to our Deposit Account No. 18-0002

IN THE DISCLOSURE:

Please rewrite the paragraph at page 8, lines 1-10, so that it reads as follows:

A1

Fig. 1 shows a structure of an optical multiplex communication system having an optical multiplexer 100 and an optical demultiplexer 200 according to the first preferred embodiment of the present invention. In Fig. 1, the optical multiplexer 100 comprises an optical pulse source 101, a modulator 102, a modulator 103, a delay circuit 104 and an optical attenuator 105. On the other hand, the optical demultiplexer 200 comprises a clock extractor 201, a 1/2 divider 202, an RF phase adjuster 203, an EA drive amplifier (electric field absorption type optical modulator drive amplifier) 204, an EA modulator (electric field absorption type optical modulator) 205, a VR detector 206, a VD detector 207, a comparator 208, a controller 209 and a mixer 210. The EA modulator 205 serves as a transmitting/blocking section, the VR detector 206 serves as a reference section, the VD detector 207 serves as a detection section, the comparator 208 serves as a judgment section, and together the controller 209, mixer 210, RF phase adjuster 203, and EA drive amplifier serve as a control section.

Please rewrite the paragraph bridging pages 8 and 9, so that it reads as follows:

A2

The optical attenuator 105 attenuates the amplitude (power) of the second signal S2 from the modulator 103 so as to cause a difference in mean power between the first and second signals SI and S2. As will be appreciated, since the amplitude shift key modulation is performed in the modulators 102 and 103, the mean power of each of the first and second signals SI and S2 changes. Thus, the optical attenuator 105 attenuates the amplitude of the second signal S2 to a degree which can fully absorb an influence of such changes in mean power caused by the modulation. On the other hand, excessive attenuation causes deterioration of the S/N ratio so that the amplitude of the second signal is actually attenuated by several %. Hereinafter, the mean power of the first signal SI outputted from the delay circuit 104 is referred to as "PI", while the mean

A2

power of the second signal S2 outputted from the optical attenuator 105 is referred to as "P2". As will be appreciated, the mean power is proportional to an integrated value of photocurrent.

Please rewrite the paragraph bridging pages 9 and 10, so that it reads as follows:

A3

In response to receipt of the electrical sine wave signal from the clock extractor 201, the 1/2 divider 202 produces an electrical sine wave signal having a period twice that of the inputted electrical sine wave signal. The electrical sine wave signal produced at the 1/2 divider will be referred to as "RF signal". It serves as a pulse-sieving signal to screen for the desired pulses, as will be discussed later. The RF signal has a phase such that its maximum (crest) and minimum (trough) value points coincide with maximum value points of the electrical sine wave signal produced at the clock extractor 201. Specifically, since the multiplexed optical pulse train signal includes the first and second signals SI and S2 which are alternately repeated every T/2, crest potions of the RF signal correspond to pulses of one of the first and second signals SI and S2.

Please rewrite the paragraph bridging pages 10 and 11, so that it reads as follows:

A4

The EA modulator 205 has an optical input port, an optical output port and a control port or modulator drive input port. The multiplexed optical pulse train signal from the optical multiplexer 100 is fed to the optical input port of the EA modulator 205. When a high voltage around 0 [V] is inputted to the modulator drive input port, the EA modulator 205 transmits or passes the inputted multiplexed optical pulse train signal therethrough to feed it to the optical output port. On the other hand, when a low voltage typically a negative voltage is applied to the modulator drive input port, the EA modulator 205 absorbs the inputted multiplexed optical pulse train signal so as not to feed it to the optical output port. Accordingly, the EA modulator 205 transmits the optical pulse train signal corresponding to the crest portion (around 0 [V]) of the biased RF signal from the

EA drive amplifier 204, ~~while~~ and absorbs the other optical pulse train signal (the transmitted optical pulse train signal is shown as waveform (F) in Fig. 2, which corresponds to waveform at point F in Fig. 1). The EA modulator 205 converts the energy of the absorbed optical pulse train signal into current and outputs it to the VD detector 207. Specifically, one of the first signal SI and second signal S2 is transmitted and fed to the optical output port, while the other of the first ~~singnal~~ signal Si and second signal S2 is absorbed and its power is converted into current and outputted to the VD detector 207.

A4

Please rewrite the paragraph at page 13, lines 2-11, so that it reads as follows:

In the optical demultiplexer 200, when the first ~~singnal~~ signal Si or second signal S2 is transmitted through the EA modulator 205, the second ~~singnal~~ signal S2 or first signal SI is absorbed in the EA modulator 205. Thus, the photocurrent proportional to P2 or PI is fed to the VD detector 207 from the EA modulator 205. The VD detector 207 derives P2 or PI based on the inputted photocurrent and outputs a voltage signal VD indicative of P2 or PI to the comparator 208. By comparing the voltage signal VD with a voltage signal VR indicative of (PI+P2)/2 from the VR detector 206, it can be determined which of the first and second signals SI and S2 is transmitted through the EA modulation 205.

A5

Please rewrite the paragraph at page 13, lines 12-25, so that it reads as follows:

In this embodiment, the comparator 208 outputs "low" when VD>VR, meaning that the second signal S2 is transmitted through the EA modulator 205. In this case, if the select signal VS is "high", the controller 209 controls the mixer 210 to invert the polarity of the RF signal fed from the mixer 210 to the EA drive amplifier 204 via the RF phase adjuster 203. As will be appreciated, in this event, if the polarity of the RF signal from the 1/2 divider 202 has already been inverted, the controller 209 controls the mixer

A5

210 to restore the polarity of the RF signal. Due to the inversion of the polarity of the RF signal fed to the EA drive amplifier 204, the optical pulse train signal transmitted through the EA modulator 205 is switched from the second signal S2 to the first signal SI. Thus, VD<VR is detected at the comparator so that an output from the comparator 208 becomes "high". Accordingly, the output from the comparator 208 agrees with the select signal VS and thus the controller 209 implements nothing to maintain such a state.